A Work Project, presented as part of the requirements for the Award of a

Masters Degree in Management from the

Faculdade de Economia da Universidade Nova de Lisboa

PRODUCT COMMUNICATION STRATEGIES:

Emotional versus Rational Communication Strategies and Attitude Change on children consumers

(Compal® juices)

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A Project carried out on the Field Lab in Marketing – Children Consumer Behaviour, with the supervision of:

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7th June 2010

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Abstract

Child obesity is generally accepted to be one of the most negative trends in the world that we live in. Since marketing for food products has been recognized to be pushing this trend forward, it is hereby presented some alternatives that prove that marketing may be a solution instead of a problem. For this purpose, an analysis on the intrinsic qualities and consumer perceptions of *Compal* and *Um Bongo* juices was produced. An experiment was made with 58 children from 4 to 10 years old, in order to evaluate the possibility of attitude change, based on Petty and Cacioppo's *Elaboration Likelihood Model of Persuasion* (ELM). In these tests the subjects were initially submitted to a blind profile of the juices, delivering only the emotional attributes currently being communicated by Compal. Then, children's perceptions regarding the product were analyzed through their drawings. Thereafter, they were exposed to an intervention phase which consisted of rationally communicating the nutritious benefits of the product and other nutrition-related concepts, and we finally evaluated their perceptions post-test using drawing techniques. There is evidence that children in this age range will change their perceptions regarding the product when a rational communication is applied.

Keywords: children, obesity, attitude change, Compal

1. Introduction

Although there is empirical evidence to affirm that there are healthy products in the market directed to children, child obesity is growing dramatically worldwide. The most recent *World Health Organization* (WHO) estimations state that in 2005 at least 20 million children under 5 years old were overweight, and predicts that by 2015, around 2.3 billion adults (over than 15 years old) will be overweight and more than 700 million will be obese. The southern European countries[1] take the leading positions on child obesity (**Appendix 1**)[2]. In what regards Portuguese children with 3 to 5 years old, about 20% are overweight, and from 7 to 9 the percentage rises to

[1] Spain, Italy, Greece and Portugal
[2] Source: IOTF.org (International Obesity TaskForce)

30%[3]. According to the results of the last *Portuguese Health Inquiry*[4] (2005-2006), obesity rates increased in every segment of the population, in comparison to 1998-1999.

In accordance with IOTF (*International Obesity TaskForce*, 2004), some of the main reasons for this worldwide phenomena are larger quantities and variety of energy dense food available (in the case of Portugal, the traditional eating values and the Mediterranean diet are disappearing), rising levels of promotion and marketing of energy-dense foods, larger portions of food, increased frequency of eating occasions, and the rising use of soft drinks to replace water (Uauy, Baur and Lobstein, 2004). In this context, WHO promoted the National Obesity Action Plans, which evidences the need for providing clear and consistent consumer information, lower energy and nutritious foods marketed for children, advertising ought to promote healthier eating, among others. Over the last years, the food and beverage industry has realized the impact of the children market and improved market effort directed to this segment. However, marketing campaigns do not always try to make children aware of the benefits of the consumption of each product, taking into account their health, but aim to influence brand awareness, preference and loyalty, and to maximize sales. As children are not conscious of the true purposes of advertisement and do not possess the cognitive capacities needed to understand and evaluate advertising until they are around 8 (Story and French, 2004), these strategies might be considered unfair to them. Also, there is evidence to state that food advertising is one of the most potent forces in influencing youngsters' eating behaviors (Story and French, 2004). Children are also greatly influenced by their parents, which are the most responsible for their eating habits, therefore it is really important that adults are conscious of the benefits and harms of different eating habits (Fisberg et al.; 2004). Thus, specific targeted children marketing could also act in the cognitive spectrum and become an instrumental tool for communicating the nutritious benefits of the products and, as such, a powerful means to spread healthy eating habits. To test the viability of a cognitive marketing approach, Compal products were considered and alternative marketing strategies taken into

[3] Plataforma Contra a Obesidade
[4] Inquérito Nacional de Saúde

account as a potential way to change consumer attitude towards an healthy product (ceasing to be so emotionally driven, and starting to be more conscious of the benefits of consuming it). As a methodological approach, this study was based in the attitude change model proposed by Petty and Cacioppo: ELM.

In what regards Sumol+Compal, the company emerged in 2008, from the merger of Sumolis and Compal, which were operating in the market for more than 50 years each (Sumolis since 1945 and Compal since 1952). **Table 1** gives us a brief overview of the Sumol+Compal size in terms of key financial indicators. The group takes a leading position in the beverage and food market, representing some of the Portuguese's favorite brands, with large market shares in carbonated drinks, juices, nectars and still fruit drinks.

Table 1

	2009	2008	2007 *
Sales Volume (millions of €)	424,6	429,0	272,4
Consolidated Net Profit	-5,9	-14,0	0,3
EBITDA	37,9	29,3	17,5

*** The 2007 figures refer to Sumolis pre-acquisition of Compal, S.A.**
Source: *Sumol+Compal Company Report*, Financial Statements; 2009 (page 10)

Sumol+Compal has nearly 50.000 direct customers in Portugal, is currently present in more than 30 countries worldwide and is working to strengthen their position abroad. In the juice market the products might be categorized in: **soda** (composed by 20% to 25% fruit or vegetable juice and water, and may have carbon dioxide (in the case of Compal juices, none has)); **nectar** (around 50% juice and 50% water, and it is allowed to add sugar up to 20% of the total weight of the final product); and **100% juice** (composed 100% by fruit juice, with no added water). The company's products cover all these categories, being *Um Bongo*, for instance, a soda, but "with the highest juice percentage in the market" (Cidália Almeida, Sumol+Compal). Compal portfolio of nutritious beverages is described in more detail in **Appendix 2**.

WHO affirms that an healthy diet, rich in fruit and vegetables, can save 2.7 million lives worldwide every year. Fruit is rich in vitamins, minerals and fibers, protective and regulator

nutrients; and the *New Food Wheel*[5] advises the consumption of 3 to 5 portions of fruit per day, depending on individual needs.

In 2009, Sumol+Compal along with other 25 national and multinational companies operating in Portugal, signed an agreement with the *Portuguese Food and Agriculture Industries Federation*[6] (FIPA), with the support of *Portuguese Advertisers Association*[7] (APAN). This pact was inspired by the EU Pledge, a self-regulation agreement, that was voluntarily signed by leading food and beverage European companies, under which, the firms agree to take actions based on two requirements[8]: **1)** No advertising of products to children under 12 years (on TV, print and internet), except for products which fulfill specific nutrition criteria based on accepted scientific evidence and/or applicable national and international dietary guidelines for the purpose of this initiative, "advertising to children under 12 years" means advertising to media audiences with a minimum of 50% of children under 12 years; and **2)** No communication related to products in primary schools, except where specifically requested by, or agreed with, the school administration for educational purposes.[9]

Compal offers a range of low caloric beverages, rich in water, vitamins, minerals and fibers. Despite all the benefits of these juices, according to Ms. Cidália Almeida[10], there is a clear problem on consumers perceptions: they do not recognize the health benefits of the Compal products. Therefore, the brand communicates its products through an emotional approach because, according to Cidália Almeida, "the typical consumer does not care much about the healthy properties of juices, and decides mainly on price".

[5] New Food Wheel ("Nova Roda dos Alimentos") was formulated by FCNAUP with the support of Instituto do Consumidor (Consumer Institute) – **Appendix 3**
[6] Federação das Indústrias Portuguesas Agro-Alimentares - FIPA
[7] Associação Portuguesa de Anunciantes - APAN
[8] EU Pledge 2009 Monitoring Report, September 09
[9] Sumol+Compal commitments in **Appendix 4**
[10] Marketing Manager of Sumol+Compal Soft Drinks Division

2. Literature Review and Secondary Data

2.1. Market Segmentation and Targeting

In 2008 (most recent data), the Portuguese market (including the Continent, Azores and Madeira) was represented by 10.627.250 habitants, of which 5.142.566 are men and 5.484.684 women. Within these numbers, there were 832.488 boys and 790.503 girls with ages comprised between 0 and 14 years old[11], accounting for a 15,3% of the population. The market may be segmented after several criteria, nevertheless, children's market, due to its only recent significance in marketing (it was no longer than the 1990's that marketers started segmenting the children's market), the segmentation is made mainly based on demographic criteria: age and gender. According to *BrandKey* (a *below the line* marketing agency, developing creative and effective campaigns and strategies, that works for Sumol+Compal), the "children + teen" market is defined by people between 4 and 19 years old, which may be divided into the following segments:

4-6 years old	7-10 years old	11-12 years old	13-19 years old
Children	Tweens	Pre-teens	Teens

Source: Fórum da Criança

In accordance with *BrandKey*, this is the "net generation", children that were born in the 1990's, very demanding, always reachable, interactive, that know exactly what they want. These kids are the responsible for the "pesting power", their ability to nag their parents into buying products that they would not purchase otherwise. Also, their economic and decision power has strengthened, due to weekly or daily allowances given by their parents and their control over their parents decisions (McNeal, 1999).

After the market has been segmented, brands must choose their target market and position themselves in the consumers' minds. Compal has products which total or partial target market is the infant market (**Table 2**)[12]. For further consideration in this work, we will take these products.

[11] Source: INE (Instituto Nacional de Estatística) - http://www.ine.pt/xportal/xmain?xpid=INE&xpgid=ine_indicadores&indOcorrCod=0000611&selTab=tab0

[12] These are described in **Table 2**, for detailed information about all Compal products, see **Appendix 2**

For the purpose of this study, *Um Bongo*'s target market will be considered: a primary market of [3; 10] years of age and mothers as secondary markets. This due to the fact that this is the product most emotionally communicated to children, and the one that has the narrower target market among the product stated in **Table 2**.

Table 2: Compal juices that have as total or partial target the children market

	Packaging	Description	Target Market	Positioning
Compal Clássico		• Is a nectar; • Fruit percentage is within 25% and 50% (depending on the fruit); • Most of the fruit used is national • The product is submitted to a series of rigorous quality tests • No dyes or preservatives	• Children: 2-14 years old • Teenagers and young aduts: 14-25 years old • Aduts: 25-50 years old	• *Compal Clássico, healthy taste*
Compal Fruta Fresca		• 100% juice directly squeezed out of fruit • No addition of water, sugar, dyes or preservatives • Expiration date varies from 25 to 30 days	• Children: 2-14 years old • Teenagers and young aduts: 14-25 years old • Aduts: 25-50 years old	• *Fresh Fruit Compal. Just fruit, nothing else.*
Compal Essencial		• It is just like fruit ready to drink • Is the only market suggestion that guarantees the nutritional equivalence of one of the items of fruit that goes into it • Convenient	• Primary Market: Women (mothers) from 30 to 45 years old • Secondary Market: children	• *Fruit is essential – Essential is fruit.*
Um Bongo **Um Bongo de 100% fruta**	 	• No dyes or preservatives • Has been a reference in the children's market for 18 years now • Market leader in the children's beverage market	• Primary Market: Children from 3 to 10 years old • Secondary Market: mothers	• Um Bongo: quality brand that offers children tasty, fun products • "Um Bongo – O BOM SABOR DA SELVA"

2.2. Attitudes and Attitude Change – The Elaboration Likelihood Model (ELM)

2.2.1. Attitudes and Attitude Change

"An attitude is a lasting, general evaluation of people (including oneself), objects, advertisements or issues" (Baron & Byrne, 1987), "these general evaluations can be based on a variety of behavioral, affective, and cognitive experiences, and are capable of influencing or guiding behavioral, affective, and cognitive processes" (Petty and Cacioppo, 1986). People form attitudes toward almost everything they have contact with, due to influencing factors that interfere with their emotions and reasoning, contributing to their learning about the object; but those may change. However, it must be regarded that very often, knowing people's attitudes towards an object, does not mean that we know which behavior they will have regarding that object.

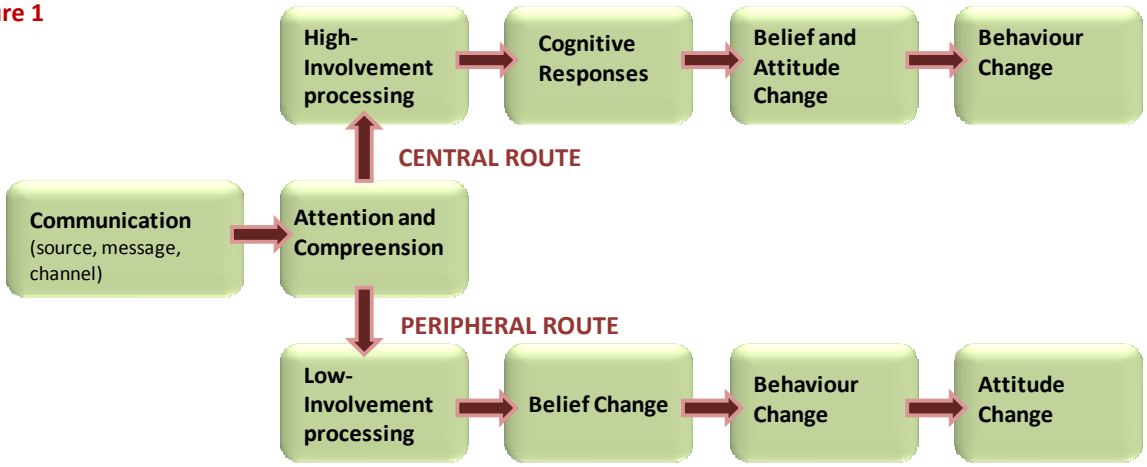
2.2.2. The Elaboration Likelihood Model

The Elaboration Likelihood Model (ELM), by Petty and Cacioppo (1981), is a general theory regarding attitude change that develops the basic processes to achieve an effective persuasion communication. According to the authors, there are two distinct routes to persuasion: the **central route** that is based on a thoughtful and detailed analysis of the arguments in a message, and the **peripheral route** that occurs when the person is carried by the attractiveness of the peripheral cues in the message (e.g. jingles, sponsors, images, product package, context in which the message is presented), and is not motivated, or does not have the ability to produce cognitive processes to analyze the arguments in the message. Elaboration, in this context, means the degree that the subject produces cognitive responses to a certain message. The way that a message is processed mainly depends on the personal relevance the message has to the individual.

Figure 1 represents the possible paths of message processes. Consumers highly involved with the message, focus more on the "steak" (strong and rational arguments) and the low-involvement consumers tend to centralize their attention on the "sizzle" (peripheral cues). The "central route" persuasion shows to be more lasting over time than the peripheral one.

A person might be influenced by the acts of some entity (behavior-initiated change), by the emotions provoked by peripheral cues (affect-initiated change), or because he/she was impressed by the ideas passed by the advertising (cognitive initiated change). When a message is important, it is wise to create personal relevance to the targeted market segment, so that people will scrutiny more, and therefore the probability of agreement with the message will be higher.

Figure 1



Source: From *Consumer Behavior*, 2nd edn. by John C. Mowen, Macmillan Publishing Company

The very young child might have low motivations or abilities to deeply scrutinize the relevant issues in a message, and their attitudes might be mainly based on what feels good or bad. However, as the child matures, he/she will have more personal incentives to analyze messages directed to them more rationally. Therefore, to try to create this central route of persuasion on children, the communication must be adapted to them, not demanding a scrutiny that they cannot achieve.

2.3. Theory of Cognitive Development (Piaget)

The Theory of Cognitive Development, developed by Jean Piaget, formulates about the four different stages and processes of the development of human intelligence:

1. Sensorimotor Period: infants understand things through senses as vision and hearing, matching those with physical actions they perform.

2. Preoperational Period: characterized by (pre)operatory thought, the mental acting on objects. Children are now able to create stable concepts of objects, mental reasoning and magical beliefs; it is also in this stage that they learn how to represent things through images, drawings and words. In spite of these new capabilities, the infant is not yet ready to perform operations (which demand cognitive reasoning). At this moment, children have egocentric thinking. This phase consists in two sub-stages: ***Symbolic Function Sub-stage*** (2-4 years old: children can draw and form images of objects that are not in their presence, start developing language skills and pretend play; and ***Intuitive Thought Sub-stage*** (4-7 years old: children start developing curiosity, using primitive reasoning; this phase includes both *centration*[13] and *conservation*[14] concepts.

3. Concrete operational stage (7 - 11 years old): the appropriate use of logic begins. This enhances the processes of: *Seriation* (order objects according to size, shape, colour, or other attributes); *Transitivity* (if A > B, and B > C → A > C); *Classification* (aggregate elements into sets, according to similar properties); *Decentering* (make inferences); *Reversibility* (understanding a number can return to its original state by adding and then subtracting units); *Conservation*; *Elimination of Egocentrism*. However, a child in this phase has difficulty in performing tasks regarding hypothetical situations.

4. Formal operational stage: starts around 11 years old and extends until adulthood. People can now think abstractly, use logic to reason, take conclusions, and apply this acquired knowledge to hypothetical contexts.

2.4. Brand Recall and Recognition

Preschoolers are known to have good recognition memory, opposed to their reduced recall memory capabilities. This is because, unlike recognition, recall memory requires a mental search for a specific memory unit, and then knowing if that activated memory unit is correct. Brand recall is the retrieval of information about a brand, apart from its presence; while recognition happens when confronted with the brand (e.g. in the purchase act). Therefore, a consumer must be

[13] Ability to focus in only one characteristic comparing to others
[14] Changing a substance's appearance does not change its basic properties

able to do both these actions. Macklin (1983) verified that 4 to 5 years old children had much more trouble in brand name recall than in their recognition. As demonstrated by Valkenburg and Buijzen (2005), children's brand recognition is already in an advanced stage of development by their 2 or 3 years old and almost fully developed at 8, while brand recall starts developing more rapidly at 7 to 8 years old. Also, new information is best learned and remembered when it can be associated with already existing knowledge in memory (Siegler, 1998). Parents (and television as well) are an important source of information to children, about brands (McNeal, 1999).

3. Research Hypothesis

In the light of these research concerning the childhood obesity context, the children cognitive development, infants recall and recognition abilities, combined with the Compal products' benefits and the model of attitude change (ELM), the following hypothesis emerged:

H1: Parents do care about their children's nutrition.

H2: Parents do have correct perceptions about the appropriate levels of juice ingredients.

H3: What drives parents in the juice purchase decision depends on their offspring's age (the younger, the more they care about real properties of the product).

H4: The older the child, the higher the tendency to draw nutrition-related issues – regarding the cognitive development stages in Piaget's theory.

H5: Girls draw more nutrition-related issues than boys.

H6: Rational Communication has changed children's attitudes towards the product.

4. Methodology

In order to test the hypotheses mentioned in the previous chapter, an experiment was design and as the subjects of the study were children, the UNICEF norms had to be taken into account. These two components of the test are described in detail in the next chapters.

4.1. Ethics on the Children Participation in the Experiment

Marketing professionals and/or academics working with children must be careful with the methods used to study this segment, due to its special vulnerability. Thus, as a means to respect

the Children Rights, the *UNICEF Evaluation Technical Notes* were taken into account (UNICEF, 2002)[15]. There are, indeed, risks associated to the participation of children in marketing research, and these are mainly due to the disproportion between the researcher and the child, and the common tendency of children to obey adults, which might raise abuse of power by the researcher; since children are still developing they might be highly affected by the investigation (Greig, Taylor e MacKay, 2007). The basic principles, that can be analyzed in more detail in **Appendix 5**, state that children should have the right to express their own views, that must be fully informed and ought to understand the consequences and impact of expressing their opinions, are free to not participate, and should not be pressured, have the right to freedom of thought, conscience and religion, and have the right to freedom of association and of peaceful assembly. Also, the capabilities of the individuals involved must be taken into account in order to define the questions to be asked. The major ethical issues pointed out by UNICEF are accountability; protection of children's best interests; informing children on the activities' details, make it clear that they can choose to participate or not to; informed consent; equity and non-discrimination; respect of children and their views; ownership; and methodological limitations. All these norms were taken into account during the research. The consent forms sent to the parents or legal guardians, included the information stated on the *National Children's Bureau* (2009): research theme; entity underneath the research (identification of the researcher and faculty (FEUNL)); children participation definition; information collection method; destiny of the information collected; confidentiality and anonymity assurance level; procedures of information analysis; who has access to results.

4.2. Experiment Design

[15] In **Appendix 5** is all the detailed information in these norms

Aiming to study the changes in consumers' attitudes after rearrangements in communication, and given that it has to do with consumer psychological issues, the experiment design was based on interviews with psychologists. First, Ms. Rita Trindade e Silva, majored in Children Educational Psychology and currently working in APPACDM[16]; and Ms. Ana Sofia Rodrigues, who is graduated in Organizational Psychology and is working at *Transportes Luís Simões, SA* were interviewed. The main conclusions were that the test should consist in first submitting the subjects to an emotional communication of the product, and after expose them to a rational communication, to evaluate their current perspectives and the possibility of attitude change. Also, it was of their opinion that the drawing technique would be a good way to test these aspects. Actually, a very similar experiment had been done by Gabhainn and Kelleher (2002), who used infants' drawings with the purpose to infer about health sustaining activities. In this article an interesting conclusion emerged, "the gender specific analyses indicate (…) girls are more likely to draw and write more pictures and thus cover more categories", which may produce different results between genders. Also, according to Banister and Booth, (2005), to study health related beliefs and behaviors in subjects with 4 to 12 years old, the best method is individual interviews and a variety of techniques (including drawing, projective techniques and visual stimuli). Therefore, the test should consist in three phases: a first phase to analyze the present attitudes, then an intervention phase where the new communication should be passed-on, and a third phase where the changes in attitudes would be evaluated, and one week should pass between the latter two phases, so to understand if children recorded the information in their memories. The words chosen to communicate with children should be carefully chosen so that the message could be easily understood. Additionally, it was consensual that the brand name should not be mentioned in order not to influence the subjects perceptions towards the real product out of the experiment. After these first impressions on the psychology field, other interviews were made to Professor António Castro Fonseca and Professor Maria João Seabra, from *Psychology and Educational*

[16] APPACDM: Associação *Portuguesa de Pais e Amigos do Cidadão Deficiente Mental*, Anadia

Sciences Faculty of the University of Coimbra[17]. Prof. Castro Fonseca, stated that different methodology could be used with the different age subjects, but they would have to be equivalent, in order to be comparable when analyzed. Afterwards, the script of the experiment was defined with Prof. Maria João Seabra, which is fully described in the *Procedure* chapter. Due to the lack of knowledge of the researcher in projective analysis, Prof. Seabra recommended that the drawing was used as a starting point to an interview, and not as a projective technique input. Regarding children's cognitive process, formulated by Piaget, individuals of this age express themselves better through creative ways (like drawing) comparing to oral means (Banister and Booth, 2005).

4.3. Sample

For the purpose of this study, I am considering the target market of [3; 10] years old. Therefore, to cover the segment, tree different school years were used in the test. One class from preschoolers (4 to 5 years old), another from 2nd grade (7 to 8 years old) and one from 4th grade (9 to 10 years of age). From the 74 consent forms delivered, only 58 children had the permission to take part on the experiment. The preschooler class was composed by 26 students, of which only 16 participated, 9 of them boys and 7 girls (n=16). From 2nd grade we had 13 boys and 7 girls participating, out of the 24 students in class (n=20). And at last, in the 4th grade class 12 boys 10 girls, out of 24 (n=22) [18].

Regarding parents questionnaires, we had 57 returned responses, out of 74 (77%). Concerning the families participating in this research, all educational levels were covered: (primary school degree; basic education (9th grade); high school graduation; college graduation; master's degrees). Both mothers and fathers have, on average, a graduation degree, however, parents are more dispersed in what regards education (larger standard deviation)[19]. On average the mean age of mothers is 40, and fathers' is approximately 42.

4.4. Procedure

[17] Faculdade de Psicologia e Ciências da Educação da Universidade de Coimbra - FPCEUC
[18] Student's Gender * Child's school year Crosstabulation in **Appendix 6**
[19] Child's school year * Education Mother, and Child's school year * Education Father Crosstabulations in **Appendix 7**

The experiment was taken in a private school in Coimbra, Portugal, which demands the binding approval of the school principal, which was given as soon as the purpose of the study was transmitted. In order to follow all the ethics principles, consent forms were sent to children's parents[20]. Also, infants were notified that even though their parents authorized them to take part in the test, they could choose not to, or if they wanted to quit, they could. However, none of the children decided to quit. They were told that if they did not want to answer a certain question, they did not have to, and if they had any type of doubt, they should feel free to ask. "There are not right or wrong answers" was clearly communicated as well. To ensure children's rights during the experiment, Ms. Rita Trindade e Silva was present, in order to guarantee that the correct approach was taken with the children involved. To maintain subjects' confidentiality and privacy, the names were replaced by serial numbers in the data quantification. Then, to test the change in children's perceptions and attitudes towards the object, the guidelines, approved by Prof. Maria João Seabra (FPCEUP) and described below, were followed:

PHASE I (day 1)**:** A fictitious name was created for the brand: "Zonko", so that children could not directly associate the study with any specific brand. Subjects were given a brief description of the product (based on the features being communicated by *Um Bongo* at the moment): "Imagine *Zonko* juice. This juice is: Funny, Happy, Trustworthy, Nice to drink, for kids who enjoy adventure, and it is really Fresh".

As sample children integrate the second and third stages of cognitive development, their propensity to express feelings through artistic means were taken into account. Then, to capture subjects' attitudes towards the object, they were asked to draw. The question had to include three crucial factors: the child, the juice, and a framework: "Now, imagine a moment in which you were drinking that juice, or any other situation that involves the juice, and draw it!".

"When kids talk to researchers, they assume the adult is a kind of teacher and that the questions are, again, about getting it right or being wrong. Overcoming that mindset is crucial" (Roper,

[20] **Appendix 8**

1989, p. 20). Although we pointed out that there were no right or wrong answers, and they were free to draw as they liked, to reinforce this idea, while children were drawing, we were passing through and giving them positive general comments for what they were doing. Also, we took both Mandell (1991) and James (1998) perspectives to approach children. As the first supports that the researcher takes the "least adult role", and the second believes the researcher should assume an adult role, to ensure better understanding, but at the same time attempting friendship.

Afterwards, an individual interview was conducted. The researchers had a grid[21] that served as a guide to observe if children's descriptions fit into the emotional or nutrition-related features (so that we could compare their standpoint before and after the communication change). The interview was only performed with preschoolers and 2nd graders, though. Due to 4th graders lack of time available, a questionnaire was used that mentioned the same aspects as the grid[22].

INTERVENTION PHASE (day 1)**:** A *powerpoint* presentation was carried out, which comprised several pictures of healthy kids, eating well, jumping, making physical exercise, and also pictures of vegetables, fruit, the Portuguese "Food Wheel", and *Zonko*'s hypothetical package and mascot, as can be seen in **Appendix 9**. While the images were passing in slideshow, students were told about some important concepts about nutrition: the "Food Wheel"; the importance of healthy eating habits and having a diversified diet; that "there are no bad foods, only bad proportions" (Christina Schmidt); the relevance of nutrients and vitamins present in fruit and their impact in people's health; and the "new" characteristics of Zonko: that is a delicious and nutritious juice, has high percentage of fruit juice (up to 100%), which is highly beneficial due to fruit importance to our body functioning, that "One glass of *Zonko* per day is OK!", parents like it, and finally, that it has sugar, but it is mainly the sugar naturally present in fruit (which is not harmful, and we actually need it). In this presentation, children were faced with an image of some possible *Zonko*'s bottles, because, as told by Professor Maria João Seabra, it is advisable that the children have some image to hold-on to. Also, a mascot was created, consisting in an image of a

[21] See **Appendix 10**
[22] See **Appendix 11.1.**

lion showing his muscled arms. This animal was chosen because, concerning the animals that make *Um Bongo*'s mascots (hippopotamus, lion, turtle, elephant, monkey and gorilla), this is the one considered most related to characteristics as strength, agility, speed, energy and others connected to physical activity, and therefore fits better in the purpose of this work.

PART II (day 2 – one week after PHASE I)**:** In class, children were asked: "Do you still remember the juice we spoken last week? *Zonko*?". Subsequently, the images were showed again (this time, printed). And then, again, subjects were asked to draw a situation regarding the juice: "Imagine that you drank this juice during this week. Or some other situation related to it. Draw that moment!". After, we proceeded, once more, to the interview phase which followed exactly the same procedure as before, except for the 4th graders, to whom was delivered an upgraded questionnaire, with some terms rewritten due to some terminology doubts that had emerged in the previous session[23]. In this phase, a new question was introduced: "how much of this juice should you drink?", and they were given multiple choice answer: "a little", "moderate quantities", or "a lot". In the end of the experiment, a final check-up was made, in order to understand if the subjects accidentally identified the real brand underneath the test, and if they associated these characteristics to any product in the market, thus children were asked: "What are the brands of juice you know? If this was one of the juices you know, which do you think it would be?".

Regarding answers' encoding, to be able to compare all school years, although 4th graders had a different post-drawing method, the criteria used was the same, and therefore, with the inputs taken from the test (drawings and questionnaires), the same interpretation criteria used with the rest of the subjects was applied, and an equivalent grid was filled-in.

In order to know more about parents' awareness regarding the nutrition aspects of the product, along with the consent forms, questionnaires were sent so to verify what is most valued on juices, in terms of nutrition, and which aspects are taken into account in the purchase moment[24]. The personal data requested were parents' ages and education. Open questions were asked regarding

[23] See **Appendix 11.2.**
[24] For more detailed information, see **Appendix 12**

whether they think general children's eating habits are worst, identical or better than the common habits in the past, and also how would they evaluate their own children's eating habits compared to their own during childhood. They were also asked which were their main concerns regarding their children's diets. Subsequently, parents were inquired to value a set of product aspects according to a *likert scale* (from 1=*not important at all*, to 5=*very important*). At last, they were presented with a grid that had the eight most common juice components (present in the labeling) and had to fill it in with the levels they thought more appropriate ("**-**": *low amount*, "**M**": *medium amount*, or "**+**": *large amount*).

All the data was introduced and coded using both *Microsoft Office Excel 2007* and the *IBM SPSS Statistics 18* systems. These programs allowed the computation of the following analyses: Descriptive statistics; *Paired-Sample* Hypothesis Testing; and Contingency tables of qualitative variables so to use the *Chi-Square* independency test.

5. Results

5.1. Interviews:

An interview with Dr. Patrícia Padrão (FCNAUP)[25] provided several interesting points regarding this subject. Dr. Patrícia commented on a document that consisted on the main ideas communicated by *Compal* and *Um Bongo* umbrella brands and their nutritional information tables. It was confirmed that these juices are recognized to be healthy, but they must be consumed within a balanced diet. These juices hydrate, distribute nutrients as a source of energy (carbohydrates and vitamins), are a source of fibers, vitamins and minerals, and micronutrients[26]. It is the interviewee opinion that generally parents do not know which food should their kids eat and in which proportions, neither do children. Also, it is her belief that the greatest gap in the communication of juices is that it is never mentioned the importance of these beverages to be inserted in a healthy eating context.

[25] Faculty of Food Science and Nutrition, Porto University (*Faculdade de Ciências da Alimentação e Nutrição da Universidade do Porto* - FCNAUP), Porto, Portugal
[26] See **Appendix 13** for more detailed information about the properties of their juices

5.2. Qualitative Analysis:

During the second phase, when children were asked if they did remember what had been spoken the week before about the juice, as expected (recall theory), 4th graders remembered everything, 2nd graders remembered most of it, preschoolers remembered only a few things.

Regarding the final check-up, **Table 3** reveals the answers of the subjects. As can be seen, there was no consensus about which was the real product.

Table 3: Subjects answers to the final check-up

School Year	Preschoolers	2nd graders	4th graders
Brands recalled by students	• UmBongo; • Ice Tea; • Compal; • Joy	• Ceres; • Um Bongo; • Granini; • Compal; • B!; • Ice Tea; • Coca-Cola; • Sumol	• Ice Tea; • Coca-Cola; • Sumol; • Compal; • TriNaranjus; • Fanta; • 7up; • Santál; • Sprite; • Sunny; • Frize; • Continente; • Jumbo; • UmBongo
"Which do you think it would be?"	"Maybe, it could be UmBongo or Ice Tea"	• "It could be Ceres"; • "It could be UmBongo"; • "It could be Granini"; • "It could be Compal"; • "But in reality there is no juice like this"	• "It could be Compal"; • "It could be Santál"; • "It could never be UmBongo, it has a lot of sugar!"

After the experiment got to an end, children were asked their opinions about the activity and what they had learned. Preschoolers said that it was joyful and they had learned that fruit is good for our health, and that a good diet gives them strength to play. 2nd graders commented that they thought the experience was cool; they were already familiar with most of the concepts about eating habits, however, they were not aware that there are juices in the market with *Zonko*'s properties. 4th graders were also excited about the experience, saying that it was very entertaining and educational, they learned *Zonko* is good for their health. It was a general fact that the sample studied would like to drink the juice in the case it was available in the market.

Regarding parents questionnaires' open questions, when asked to compare the present eating habits to "old times", parents were mostly saying that the situation had gotten worst, because of the current availability of fast-food and junk-food, the chemicals now present in food, and all the excesses. On the topic of parents main worries associated with their kids' eating habits, one of the

most cited was the trouble in managing that their children eat fruit and vegetables. Many of the preschoolers' parents were admitting that their kids do not consume juices, only water and milk.

5.3. Quantitative Analysis

5.3.1. Descriptive Statistics

Concerning parents' answers to questions 2 and 3 in their questionnaire, we may conclude that, in their opinion, child eating habits have deteriorated until now, however, most of the parents consider their own children's eating habits identical to their own.[27] In what regards children's drawings, **Figures 1, 2** and **3** present some examples of the typical output for each school year in both phases. According to the analysis grid, the main changes observed between phases were[28]:

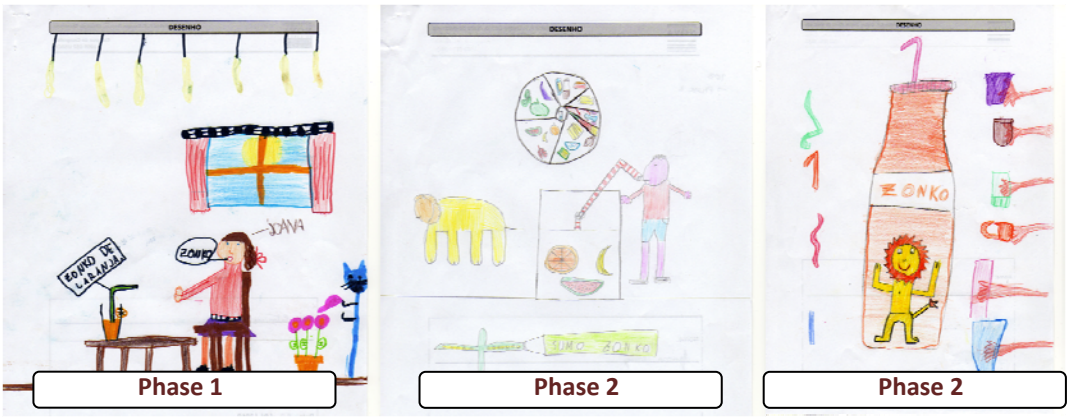
- **Preschoolers:** the number of drawings that mentioned "tasty", "cool", "serious", "energy", "drink with friends", "outdoors", "tree" aspects increased by more than 25% from the first to the second phase. But more focus should be taken on "healthy" that increased more than 75%. When asked which should be the quantities consumed of the juice, 87,5% of subjects responded "a lot".

Figure 1: Drawings from preschoolers: 1st phase vs. 2nd phase

- **2nd graders:** these children showed an increase of more than 25% on "energy", "drink with friends", "drink with parents/adults", "juice in glass", ""ingredients", and "written *ZONKO*". "Sweet" showed a decrease in 25%. In this case, the aspects that demonstrated a raise of more than 75% were "nice to drink", "trustworthy" and "healthy". When asked which should be the quantities consumed of the juice, 75% of subjects responded "moderately".

[27] Frequency Tables and Frequency Graphs in **Appendix 16**
[28] Frequency Tables and Frequency Graphs in **Appendix 14**

Figure 2: Drawings from 2nd graders: 1st phase vs. 2nd phase



- **4th graders:** "trustworthy" and drawing of the "*ZONKO* mascot" rose by more than 25%. When asked which should be the quantities consumed of the juice, 81,82% of subjects responded "moderately".

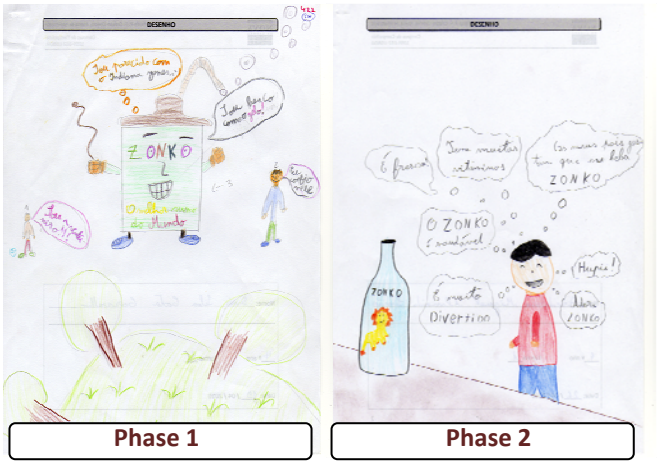


Figure 3: Drawings from 4th graders: 1st phase vs. 2nd phase

5.3.2. Hypotheses Testing

H1: Parents do care about their children's nutrition.

This first hypothesis may be tested through descriptive statistics. In this sense, to "care about their children's nutrition" means that parents focus more on the nutritious aspects, rather than emotional features of products when they make the purchase decision. To perform this analysis we need to take a look at **Table 4** that reveals the descriptive statistics regarding the drivers of parents purchase.

	Mean	Std. Deviation
5. Juice is fun	1,39	,777
5. Juice is tasty	3,15	1,363
5. Juice is fresh	3,25	1,466
5. If it has or not dyes	4,43	,855
5. If it has or not preservatives	4,40	,891
5. Low price	2,20	1,149
5. Attractive Packaging	1,68	,891
5. Known brand	2,72	1,161
5. High level of juice %	4,70	,696
5. If it has or not carbon dioxide	4,23	1,086
5. If it has or not anti-oxidants	3,56	1,211
Valid N (listwise)		

Table 4: Descriptive Statistics of Parents' Responses to Question 5

Although means in *likert scales* do not have any quantitative value, they help us understand the average point from parents' answers. In this light, the most important conclusions concerning emotional aspects (fun, taste, fresh, price, packaging, and familiarity with the brand) are that these are not much taken into account, once their mean responses were around low values within the scale, or the answers were too dispersed, forming a smooth distribution. In the nutrition-related context, "dyes" and "preservatives" showed a very similar distribution, with concentrated responses around 5, thus both considered very important. The "percentage of juice" was also considered very important (mean approximately 5), as well as whether the juice has or not "carbon dioxide" (mean close to 4) and "anti-oxidants" (mean roughly 4). All the nutrition-related features revealed to be much more important to the consumers. Therefore, there is statistical evidence to support the first hypothesis.

H2: Parents' do have correct perceptions about the appropriate levels of juice ingredients.

To analyze this hypothesis I used the sixth question in parents questionnaires, which might also be tested through descriptive statistics. To set the standard appropriate levels of juice ingredients, I used some notions of the *Portuguese New "Food Wheel"* published by FCNAUP (**Appendix 15**). However, there are some characteristics of the juice that do not appear in the table in the appendix, such as proteins, calories or level of juice. For these I took into account the values of protein consumption mentioned in the Rodrigues, Franchini, Graça, and Almeida article (2006): between 10% and 15%; the fact that the level of calories ingested should be higher on children because of their lifestyles and age; and that the highest the proportion of fruit juice, the better. **Table 5** reveals the appropriate values of the components and the most common responses given by parents.

Table 5: Appropriate ingredient levels for children VS. Answers given by parents

	-	M	+
Carbohydrates			✓
Calories		✓	
Proteins	✓		
Lipids	✓		
Fibers			✓
% of fruit juice			✓
Sodium	✓		
Vitamins			✓

Appropriate Levels

	-	M	+
Carbohydrates	✓		
Calories	✓		
Proteins		✓	
Lipids	✓		
Fibers		✓	✓
% of fruit juice			✓
Sodium		✓	
Vitamins			✓

Parents' Responses

Parents' notions of adequate levels for lipids, fibers, juice percentage and vitamins are correct. Although, their perceptions regarding carbohydrates, calories, proteins and sodium are wrong. Therefore, this hypothesis is rejected as well, revealing that parents do not know the appropriate levels juices ought to have to be healthy for their children.

H3: What drives parents in the juice purchase decision depends on their offspring's age (the younger, the more they care about products' real attributes).

This test was meant to evaluate parents' drivers in the purchase action relation with their children's age. For that I took as an input question 5 where they were asked to level some aspects of juices according to the importance these have to them. As mentioned before, to measure this, a *Likert Scale* was used. Answers were, thus, discrete rather than continuous and since the Chi-Square statistic assumes a discrete distribution (instead of a normal one), the statistical validity is assured. However, to perform this test, some assumptions must be verified: the n observed counts are a random sample from the population of interest; and the sample size n, will be large enough so that, for every cell, the expected count will be equal to 5 or more.[29] Unfortunately, in this test, all the resulting contingency tables have expected count less than 5, when this happens, we may use the *Likelihood Ratio Chi-square* test to perform the same study concerning the independence between variables. For large samples, as this one (n=57), *Likelihood Ratio Chi-square* will lead to the same conclusions as *Pearson Chi-square* analysis of significance. Therefore, bearing in mind that we made these tests for an α=5%, the conclusions in **Table 6** were taken, from the analysis of

[29] McClave, Benson, and Sincich, *Statistics for Business & Economics*, 10th ed. – Pearson International Edition

the p-values (a p-value < 0,05 will lead to the rejection of the null hypothesis (H0: the variables are independent) which means that the variables are, in fact, dependent on one another).

Consequently, we can only assume dependency between the "fun" characteristic and the age of the parent's child, all the others must be considered independent from the school year as there is not enough evidence to reject the null hypothesis. But in order to see if the relation among variables is positive or negative (if the importance to the parents increases with the child's age or decreases) we need to test the correlation through the Spearman Test, because we are considering non-parametric variables. The sign of the Spearman correlation indicates the direction of the relationship between the dependent variable (age of the child) and the independent variable (importance of the fun aspect of the juice), and as **Table 7** shows us, the sign is negative, which means that as the child grows-up, the less important this characteristic becomes to parents. Also, the observed significance level (p-value) is larger than 5%, therefore, there is no evidence not to trust this result.

Table 6. Results of the independency hypothesis testing of school year with juice characteristics (parents)

	Test Statistic	Value	df	p-value	Conclusion
Fun * School Year	Likelihood Ratio	13,465	6	0,036	**Reject H0**
Tasty * School Year	Likelihood Ratio	7,102	8	0,526	Do not Reject H0
Fresh * School Year	Likelihood Ratio	3,831	8	0,872	Do not Reject H0
Dyes * School Year	Likelihood Ratio	4,450	6	0,616	Do not Reject H0
Preservatives * School Year	Likelihood Ratio	5,999	8	0,647	Do not Reject H0
Price * School Year	Likelihood Ratio	13,266	8	0,103	Do not Reject H0
Packaging * School Year	Likelihood Ratio	4,083	6	0,665	Do not Reject H0
Known Brand * School Year	Likelihood Ratio	3,839	8	0,871	Do not Reject H0
Juice % * School Year	Likelihood Ratio	7,817	6	0,252	Do not Reject H0
Carbon Dioxide * School Year	Likelihood Ratio	8,227	8	0,412	Do not Reject H0
Anti-Oxidants * School Year	Likelihood Ratio	13,439	8	0,098	Do not Reject H0

Table 7.

Correlations

			5. Juice is fun	Child's school year
Spearman's rho	5. Juice is fun	Correlation Coefficient	1,000	-,092
		Sig. (1-tailed)	.	,260
		N	51	51
	Child's school year	Correlation Coefficient	-,092	1,000
		Sig. (1-tailed)	,260	.
		N	51	58

H4: The older the child, the higher the tendency to draw nutrition-related issues after the intervention phase.

Once more, the results of the hypothesis test are resumed in **Table 8,** which demonstrates that the variables that appear to be dependent from the child's school year are nice to drink, trustworthy, energy, ingredients, outdoors, no carbon dioxide and healthy eating context, being the last also considered dependent because the p-value is not small enough to reject the null hypothesis. Thus, we conclude that seven nutrition-related issues out of twelve were considered dependent on age, which leads us to consider that there is enough evidence to support the hypothesis.

Table 8: Results of the independency hypothesis testing of school year with juice characteristics (children)

	Test Statistic	Value	Df	p-value	Conclusion
Good * School Year	Likelihood Ratio	1,296	2	0,523	Do not Reject H0
Nice to Drink * School Year	Chi-Square	38,498	2	0,000	**Reject H0**
Trustworthy * School Year	Chi-Square	35,795	2	0,000	**Reject H0**
Healthy * School Year	Likelihood Ratio	3,995	2	0,136	Do not Reject H0
Energy * School Year	Chi-Square	10,533	2	0,005	**Reject H0**
Ingredients * School Year	Chi-Square	8,511	2	0,014	**Reject H0**
"1 glass per day is OK" * School Year	-	-	-	-	-
Healthy Eating Context * School Year	Likelihood Ratio	5,620	2	0,060	**?**
Protection Against Diseases * School Year	Likelihood Ratio	2,622	2	0,270	Do not Reject H0
Outdoors * School Year	Chi-Square	16,200	2	0,000	**Reject H0**
No added sugar * School Year	Likelihood Ratio	6,705	2	0,035	**Reject H0**
No carbon dioxide * School Year	Likelihood Ratio	4,396	2	0,111	Do not Reject H0

H5: Girls draw more nutrition-related issues than boys.

This test was performed in a very similar way to the previous. **Table 9** shows that dependency might only be verified between gender and "no added sugar", and only because p-value is not small enough to reject the H0. Therefore we can say that there is enough evidence to reject H5.

Table 9: Results of the independency hypothesis testing of gender with nutrition juice characteristics (children)

	Test Statistic	Value	df	p-value	Conclusion
Good * Gender	Likelihood Ratio	0,366	1	0,545	Do not Reject H0
Nice to Drink * Gender	Chi-Square	0,146	1	0,702	Do not Reject H0
Trustworthy * Gender	Chi-Square	0,079	1	0,778	Do not Reject H0
Healthy * Gender	Likelihood Ratio	0,063	1	0,803	Do not Reject H0
Energy * Gender	Chi-Square	0,794	1	0,373	Do not Reject H0
Ingredients * Gender	Chi-Square	1,093	1	0,296	Do not Reject H0
"1 glass per day is OK" * Gender	-	-	-	-	-
Healthy Eating Context * Gender	Likelihood Ratio	1,122	1	0,290	Do not Reject H0
Protection Against Diseases * Gender	Likelihood Ratio	1,790	1	0,181	Do not Reject H0
Outdoors * Gender	Chi-Square	0,000	1	1,000	Do not Reject H0
No added sugar * Gender	Likelihood Ratio	3,319	1	0,068	**?**
No carbon dioxide * Gender	Likelihood Ratio	0,062	1	0,803	Do not Reject H0

H6: Rational Communication has changed children's attitudes towards the product

To test the sixth hypothesis, the *Paired* or *Matched Samples* t-test was used. To this purpose, I considered only the 12 characteristics related to nutrition (good, nice to drink, trustworthy, healthy, energy, ingredients, healthy eating context, protection from diseases, outdoors, no added sugar, and without carbon dioxide). This test is used to compare "before and after" situations, taken from the same data source. These are considered a *pair*: answer given in the first phase versus answer given in the second phase (for each student). Then, the difference among the mean amount of answers in each phase will be tested, through the null hypothesis "H_0: $\mu_1=\mu_2$" (no change from phase 1 to phase 2), so, a rejection to this hypothesis means that there was, in fact a change. This test is performed with small-sized samples. Each school year was tested separately, and each class has a number of students inferior to 30, so these are considered small samples. Thereafter, the following assumptions must be verified: only the matched pair can be used to perform the paired sample t-test; normal distributions are assumed; it is assumed that the variance of two samples is identical; observations must be independent of each other (which is also verified, once they were taken in different moments in time).[30]

Preschoolers

Table 10: Paired Differences Preschoolers

		t	df	Sig. (2-tailed)
Pair 1	F1. Bom - F2. Bom	,565	15	,580
Pair 2	F1. Dá Prazer ao Beber - F2. Dá Prazer ao Beber	,000	15	1,000
Pair 4	F1. Saudável - F2. Saudável	-10,247	15	,000
Pair 5	F1. Menciona Energia (Posso brincar muito se o beber) - F2. Menciona Energia (Posso brincar muito se o beber)	-2,423	15	,029
Pair 6	F1. Menciona Ingredientes - F2. Menciona Ingredientes	,565	15	,580
Pair 8	F1. Menciona o contexto de alimentação saudável (outros alimentos) - F2. Menciona o contexto de alimentação saudável (outros alimentos)	-1,000	15	,333
Pair 9	F1. Menciona protecção contra doenças - F2. Menciona protecção contra doenças	-1,000	15	,333
Pair 10	F1. Fora de Casa - F2. Fora de Casa	-2,236	15	,041

In the case of preschoolers, as shown in **Table 10** the hypothesis was rejected for an α=5% (cases where p-value < 0,05) for "healthy", "energy", and "outdoors". This demonstrates that after the intervention phase, children from this school year paid more attention to these characteristics. This probably reflects a change in their attitudes. But

[30] www.statisticssolutions.com

now we must see if these changes were for the better, in other words, that in the 2nd round subjects gave more responses nutrition-related ($\mu_0 < \mu_1$). For that, we consider the values in **Appendix 17** where we observe that all the mean of answers in the second phase were bigger. This leads us to the conclusion that there is evidence to believe that a change was observed (even though not striking) in preschoolers attitudes towards the product, being more focused on its true benefits.

2nd Graders

Regarding 2nd graders, the exact same procedure was taken, which revealed changes in "nice to drink" (p-value = 0), "trustworthy" (p-value = 0), "healthy" (p-value = 0), and "ingredients" (p-value = 0,031) and "energy" (the p-value is 0,056; not small enough to reject the null hypothesis) features (**Table 11**). Once more, the second phase means reveal to be larger than the first phase's, which conducts us to get to the finding that in this school year there was a considerable change in attitudes from children towards the product (**Appendix 18**).

Table 11: Paired Differences 2nd graders

		t	df	Sig. (2-tailed)
Pair 1	F1. Bom - F2. Bom	1,453	19	,163
Pair 2	F1. Dá Prazer ao Beber - F2. Dá Prazer ao Beber	-4,485	19	,000
Pair 3	F1. É de Confiança - F2. É de Confiança	-13,077	19	,000
Pair 4	F1. Saudável - F2. Saudável	-4,819	19	,000
Pair 5	F1. Menciona Energia (Posso brincar muito se o beber) - F2. Menciona Energia (Posso brincar muito se o beber)	-2,032	19	,056
Pair 6	F1. Menciona Ingredientes - F2. Menciona Ingredientes	-2,333	19	,031
Pair 8	F1. Menciona o contexto de alimentação saudável (outros alimentos) - F2. Menciona o contexto de alimentação saudável (outros alimentos)	-1,000	19	,330
Pair 10	F1. Fora de Casa - F2. Fora de Casa	,370	19	,716
Pair 11	F1. Não tem Açúcar Adicionado - F2. Não tem Açúcar Adicionado	-1,000	19	,330
Pair 12	F1. Sem Gás - F2. Sem Gás	,000	19	1,000

4th Graders

The test made with the 4th graders demonstrated a significant change in the "nice to drink" (p-value = 0,021), and "trustworthy" (p-value = 0) aspects as shown in **Table 12**. "Trustworthy" features revealed a positive change, however, the change in "nice to drink" was negative, once the mean responses in the second phase was smaller than the first, as can be seen in

Table 12: Paired Differences 4th graders

		t	df	Sig. (2-tailed)
Pair 1	F1. Bom - F2. Bom	-,810	21	,427
Pair 2	F1. Dá Prazer ao Beber - F2. Dá Prazer ao Beber	2,485	21	,021
Pair 3	F1. É de Confiança - F2. É de Confiança	-5,020	21	,000
Pair 4	F1. Saudável - F2. Saudável	-1,000	21	,329
Pair 5	F1. Menciona Energia (Posso brincar muito se o beber) - F2. Menciona Energia (Posso brincar muito se o beber)	,901	21	,378
Pair 6	F1. Menciona Ingredientes - F2. Menciona Ingredientes	-1,555	21	,135
Pair 10	F1. Fora de Casa - F2. Fora de Casa	,568	21	,576
Pair 12	F1. Sem Gás - F2. Sem Gás	1,449	21	,162

Appendix 19. In this case, a possible justification for not having more significant changes might be due to the fact that some characteristics were already considerably mentioned in the first phase (more than half of the students mentioned them), and so, in the second phase these revealed a slight increase, therefore not considered a major change.

6. Conclusions and Suggestions

Considering the conjuncture spoken within this dissertation, allied to the hypotheses testing outcome that parents care about their children's nutrition; that they do not have correct perceptions about the appropriate levels of juice ingredients; that the only purchase driver dependent on the child's age is "the juice being fun" and is negatively correlated to age; that the older the child, the higher the tendency to draw nutrition-related issues after the intervention phase; and that rational communication has changed children's attitudes towards the product, some suggestions are hereby presented, that could be prosecuted by the Compal brands in order to create a bigger awareness of healthy eating habits on children and parents. There are, though, some limitations with this model, mainly due to the small sample size for each school year, which limits the generalization of conclusions to the population, still, these can be predictive.

During research, a very mentioned issue was that one of the best ways to get children involved with healthy food is to get them grow their own food. Another way is making infants cook their meals, put them to kitchen duty (age-appropriate tasks in the kitchen). The first suggestion is that the brand sponsors these kind of school activities in order to enhance children identity to healthy food, or even promote thematic school-plays. Also, actions such as healthy meals (perhaps through partnerships with other food companies, in order to create different menus, providing children with diversified healthy choices), or suggest recipes. Additionally, labeling is a rich source of information (Dimara, and Skuras, 2005), however, as *hypothesis 2* test revealed, consumers are not aware of the correct levels that the product should have, therefore, another suggestion could be designing labels in a more non-expert approach, in order to get consumers really conscious of what they are buying.

To change the communication strategies, we have to take into account that consumers are already used to the old communication and will inevitably relate present to past strategies. This must be considered, not to give a complete new image of the product that might confuse consumers. For instance, *Um Bongo* communication that was totally emotional should now be a combination of emotional and rational, keeping the mascots and all the image of the brand, but to instill the nutrition notions. Regarding the communication of the other Compal juices apart from *Um Bongo*, as this is a relevant issue, having experts (nutritionists) passing-on the information might be useful in increasing credibility to consumers. Though, going through the "fear" path is not recommended (communicating benefits by contrasting them with negative situations), first because most children are not afraid of getting fat or getting sick, they are mostly afraid of burglars, monsters and of the dark (Prof. António Castro Fonseca); second, if the threat is too big, the audience will have the tendency to deny its existence, not to face the potential danger.

As all the tests demonstrated, 2nd graders were the ones who gave more evidences of change. Preschoolers did not demonstrate much knowledge in neither phases. 4th graders exhibited developed knowledge in phase 1 to start with, and therefore the changes to the second phase were not much significant. Therefore, these should be the consumers in which to focus most efforts to an attitude change in this segment. Additionally, as observed during the experiment, children are not aware that there are juices with *Zonko*'s properties in the market, and are also mislead concerning some of these products' ingredients, this only comes to enlighten that if these products have benefits that are not being perceived by the target market, there is a margin to innovate.

Other interesting ideas for researchers to explore in this field, could be to test attitude change regarding nutritional aspects in adults.

Once this rational communication approach is put in practice, it is expected that the brand strengthens the connection to health and positive concepts in the minds of consumers and society. As well as it will enhance consumers' knowledge regarding healthy habits and promote better life standards.

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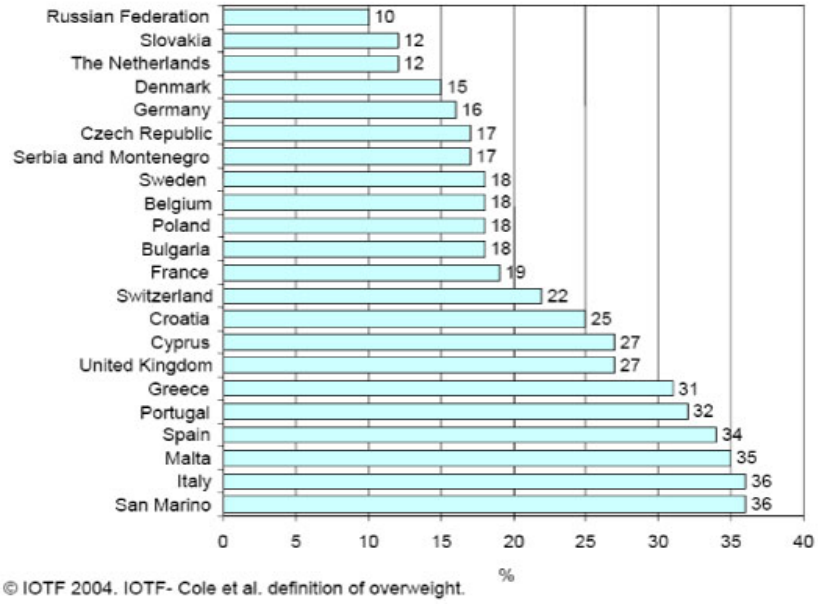
8. Appendices

Appendix 1



Appendix 2: Information of all Compal umbrella brands and Um Bongo

Quality brand for children, tasty and fun products that take kids to the "entertaining world of the jungle". *Um Bongo – The great flavour of the jungle.*

- **New Um Bongo 100% juice:** with no sugar addition, 100% fruit juice.

Guarantees the nutritional equivalence of one of the items of fruit that goes into it (only one in the market). This correspondence was proved by an international independent lab (Dr. F Echevarne Lab), and it was considered that the product had all the relevant nutrients in fruit. *Fruit is essential – Essential is fruit.*

Refreshing juice that has high fruit content (100% in most flavours). Young, irreverent and irrepressible brand. *Compal Fresh, Natural Refreshing Power.*

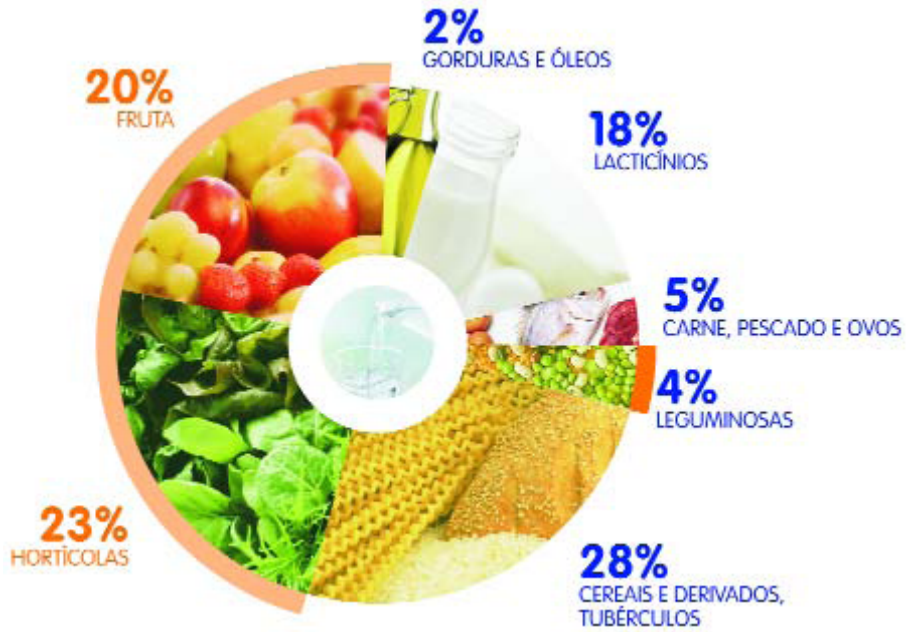
Is made of the fruit richest in antioxidants (responsible for the protection of cells against daily stresses). *Compal Vital, Antioxidant Protection.*

Nutritional balance of fruit. Combination of different fruit in a low-calorie drink. *Compal Light, half the calories but all the flavour.*

Is a genuine "nectar from the fruit of the tree". It is a nectar pulp, full of body and flavour. *Compal Classic, fruit that does you as good as it tastes.*

100% fruit juice squeezed directly to the bottle. Does not have any water, sugar, additives, dyes or preservatives. Thus, the expiration date is short, from 25 to 30 days. *Fresh Fruit Compal. Just fruit,nothing else.*

Appendix 3: The Portuguese New "Food Wheel"



The "New Food Wheel" (*Nova Roda dos Alimentos*) was developed under the context of the "Health XXI Programme" (*Programa Saúde XXI*), by FCNAUP (*Faculdade das Ciências da Alimentação e Nutrição da Universidade do Porto*), with the support of Consumer Institute (*Instituto do Consumidor*).

Food Groups and Subgroups of the New Portuguese Food Guide, Number of Food Items Included (Raw or Cooked) and Mean Nutrient Content by 100g

		Macronutrient Content (mean)			
Food Group	**Number of Items and Subgroups Included**	**Protein (g)**	**Lipid (g)**	**Carbohydrate (g)**	**Energy (kcal)**
Fats and Oils	13 items (all raw); 4 subgroups: olive oil/other vegetable oils, lard, butter/margarines, cream	1.4	76.3	1.0	696
Milk and Dairy Products*	30 items (all raw); 5 subgroups: milk, yogurts, hard cheese, fresh cheese, curd cheese	19.7	19.8	1.8	264
Meat, Fish, Seafood, and Eggs	72 items (all cooked); 2 subgroups: meat (pork, beef, lamb, veal, rabbit, chicken, duck, turkey, game)/fish/ seafood (mollusks and crustacean), and eggs	23.9	11.9	0.0	203
Pulses	12 items (all cooked); 2 subgroups: fresh and dried pulses	7.8	1.6	14.1	99
Potato, Cereal, and Cereal Products	64 items (cooked values for potato, rice and pasta, raw values for all others); 6 subgroups: bread, maize bread, potato, ready-to-eat breakfast cereals, semi-sweet biscuits, and rice/pasta	6.5	2.3	57.6	268
Vegetables	34 items (raw values for lettuce, garlic, carrots, cucumbers, onions, and tomato; cooked values for all others); no subgroups	1.7	0.5	3.5	24
Fruits	20 items (all raw); no subgroups	0.8	0.7	12.1	59

*For this group, calcium values were also considered (mean = 610.7 mg).

Source: ***A New Food Guide for the Portuguese Population: Development and Technical Considerations*** **(Rodrigues, Franchini, Graça, and Almeida, 2006)**

Appendix 4: Commitments signed by the participants in the FIPA self-regulatory agreement and Sumol+Compal actions in this context

Commitment #1: Composition and Availability of Products

This commitment states that Sumol+Compal should make available a large range of products with different nutritional compositions which offer the consumer the option to choose among different and balanced diets. To have some impact in the obesity reduction, they offer products with low calories and without sugar addition. Even the volume of the packages are carefully calculated, to be adequate in the nutritional level, not to be consumed in exaggerated quantities.

Commitment #2: Nutritional Information for Consumers

They believe that providing consumers with information about what they are consuming, is a great step to promote a more balanced eating style, because it helps consumers to make better and more informed choices. Information about the components of their products are available on the packages and also on websites and helplines.

Commitment #3: Children Marketing

Children under 13 have limited abilities to evaluate information bombarded to them. This makes marketing a very delicate field then. Sumol+Compal assumes the responsibility to protect children from persuasive marketing and is sensitive to the central role parents and teachers have in the orientation of children choices.

SUMOL+COMPAL subscribes and respects the guidelines established in the "Good Practices in Comercial Communication to Children Code" (*Código de Boas Práticas na Comunicação Comercial para Menores*) of Associação Portuguesa de Anunciantes (APAN). The company will also maintain the dialog with schools, in order to provide them with the product portfolio that best fits in the school needs, and guarantee that in schools which kids under

13 attend, the communication of the company's products is in accordance to what stated with the school.

Commitment #4: Promotion of healthy lifestyles

Sumol+Compal tries, whenever possible, to pass-on the concept of the importance of healthy life standards and balanced diets. The company does this through campaigns that focus on the nutritional information of their products. However, they do not assume the coordination nor execution of eating education because they consider this is responsibility of the State and families.

Commitment #5: Partnerships

The group is conscious that this is a great challenge and that they have to work along with other entities, that's why they have partnerships with the Portuguese Health Ministry (Ministério da Saúde), the Anti-Obesity Platform (Plataforma Contra a Obesidade), the Portugeuse Education Misnistry (Ministério da Educação), sectoral and professional of public health and other public partners. (FIPA Newsletter Nº 20, November 2009)

The firms involved assumed that until the end of 2010 they will implement voluntary actions, specific for each company, regarding food advertisement directed to children.

Appendix 5: Evaluation Technical Notes (UNICEF Evaluation Office April 2002)
Children Participating in Research, Monitoring And Evaluation (M&E) — Ethics and Your Responsibilities as a Manager

The four articles related to participation further establish the parameters:

· **Article 12** states that children who can form their own views should have the right to express those views and have them taken into account. However, the right to participate and freedom of expression are not equated with self-determination. Each child's views are their "reality", which must be considered, but also must be weighed against the best interests of the child in any decisions eventually taken.

· **Article 13** states that children have the right to freedom of expression, which includes seeking, receiving and giving information and ideas through speaking, writing or in print, through art or any other media of the child's choice. Their participation is not a mere formality; children must be fully informed and must understand the consequences and impact of expressing their opinions. The corollary is that children are free to not participate, and should not be pressured. Participation is a right, not an obligation.

· **Article 14** establishes that State parties must respect children's right to freedom of thought, conscience and religion, as well as parents' or guardians' role in their exercising this right. Research and M&E activities seeking to involve children must clearly acknowledge and ideally seek to build on these respective roles.

· **Article 15** establishes that the States parties must recognise children's right to freedom of association and of peaceful assembly. As children's capacities evolve, they will increasingly participate and seek the representation of their perspectives in wider fora — at community, sub-national, national and global levels. Research and M&E activities can help this evolution along.

The Convention establishes that participation should be seen as both a process and an end in and of itself; that the very act of participation should be seen as contributing to the development of the children involved. This suggests highly participatory approaches to research and M&E where children are involved from design to the use of results.

Ethical issues

Several complex ethical issues emerge around children's participation in research and M&E without a guideline on how to respond to any of them. They include:

· **Accountability.** Since researchers and programme managers are accountable to a wide range of stakeholders (including primary stakeholders, i.e. those intended to benefit from programme interventions), and the involvement of primary stakeholders in research and M&E activities is an expression of this accountability, then research and M&E should also involve the participation of children. Their participation is relevant not only where planned interventions and issues specifically affect them, but also where they, as members of the wider community, are affected (e.g. in relation to safe drinking water). It must be clear in initial research and M&E design proposals what role will children play and how will they be involved.

· **Protection of children's best interests**. This has very clear and powerful implications for the process of research and M&E as well as for the dissemination of its results.

- Children **must not be exposed to risks** if there is no benefit to them. These include the psychological effects on the individual child of participating in the activity (for example, in cases of abuse where the fears and pain of past experiences re-emerge); the social costs of participating such as negative effects on family and community relations; more acute threats such as reprisals by people who feel threatened by children's participation; and misuse of information, ranging from sensationalist media attention or to more sinister uses in situations of conflict and humanitarian crisis. Weighing these risks against possible benefits requires careful judgement, particularly where risks to individual children are done in the name of broad sometimes incremental societal changes.

- Those leading and carrying out research and M&E activities are also responsible **for protecting children from placing themselves at risk**, even where a child might be willing to participate and voice their views (Boyden and Ennew, 1997; Boyden 2000).

- The responsibility to protect children may also entail **withholding information** from children where that information may place them at risk (Boyden and Ennew, 1997). Children may not always be able to cope with the implications of information received or may not be able to judge adequately when and with whom to share that information.

- Research and M&E activities must be able to ensure **confidentiality**. However, information may at times reveal that a child is at risk or is a risk to others, which is why design of research and M&E activities must include **guidelines for breaking confidentiality and intervention**, including defining what follow-up and referrals can be made. Children must be made aware of the limits to confidentiality and possible intervention based on what is in their best interests.

· **Informing children.** Research and M&E managers are responsible for ensuring that children receive the information they need to form and express their views as well as to decide whether they choose to express them at all. To "inform" should be understood as meaning more than simply providing information. How information is conveyed must be appropriate to the context and to children's capabilities. How informed children are affects how their views can be interpreted.

· **Informed consent.** The focus of most ethical guidelines is on research in the West, this has often involved signed consent forms to ensure that participants in research are aware of any potential implications of their involvement (by the same token to protect researchers from liability). Researchers must respect the consent regulations of the countries in which they are working, however, parental consent is not an adequate standard in light of the rights of the child. Informing children of the potential implications is required. Further, consent should not be a one-time event in the course of a child's participation. It should be a negotiation of the parameters and limits of his/her participation, an ongoing exchange in which a child's views and best interests are paramount (Alderson, 1995). All issues of negotiating consent and encouraging children to express themselves must be carried out with clear recognition of the natural power imbalance between children and adults.

· **Equity and non-discrimination.** Those involved in research and M&E must ensure that selection of those children who participate and the processes and methods used serve to correct, not reinforce, patterns of exclusion. This requires attention to socio-economic barriers including gender and age discrimination as well as to the different ways and capacities in which children express themselves.

· **Respect of children and their views.** Those involved in design must choose methods and processes that best facilitate children expressing their views. Methods will most often be qualitative, and processes will likely be capacity building or participatory. However,

respecting children's views does not mean allowing them to dictate conclusions. A child's input, like that of any other stakeholder, must be weighed as one perspective and interpreted in light of his/her experience, interests and evolving capacities. Assumptions and frameworks for interpreting information must be appropriate to the children involved and transparent to ensure credibility with users of research and M&E results.

· **Ownership**. Children must be informed of the results of the research. And since children will likely express themselves by diagramming and drawing, they should also be given rights of ownership of the research "data".

· **Methodological limitations.** It is unethical to carry out data collection if the design will not achieve the research objectives or respond to evaluation questions. Methodological limitations must be considered carefully, including the potential effects of power relations between children and adults. In order to increase children's participation, methodologies will likely tend towards the more qualitative with more specific adaptations for the children involved, and findings will be representative of narrower populations. Those involved in initial research and M&E design must balance degrees of participation of children with the credibility and breadth of application of research and M&E results.

Appendix 6: Sample composition

Student's Gender * Child's school year Crosstabulation

			Child's school year			Total
			Pre-school	2nd grade	4th grade	
Student's Gender	Feminine	Count	7	7	10	24
		% within Student's Gender	29,2%	29,2%	41,7%	100,0%
	Masculine	Count	9	13	12	34
		% within Student's Gender	26,5%	38,2%	35,3%	100,0%
Total		Count	16	20	22	58
		% within Student's Gender	27,6%	34,5%	37,9%	100,0%

Appendix 7: Sample: Education Frequencies of Mothers and Fathers arranged by school year of their children

Child's school year (description) * Education Mother Crosstabulation

			Education Mother				
			Ensino Secundário (9º ano)	12º ano	Licenciatura ou Bacharelato	Estudos Pós-Graduados	Total
Child's school year (description)	2nd grade	Count	1	3	6	10	20
		% within Child's school year (description)	5,0%	15,0%	30,0%	50,0%	100,0%
	4th grade	Count	0	2	9	8	19
		% within Child's school year (description)	,0%	10,5%	47,4%	42,1%	100,0%
	Pre-school	Count	1	1	11	2	15
		% within Child's school year (description)	6,7%	6,7%	73,3%	13,3%	100,0%
Total		Count	2	6	26	20	54
		% within Child's school year (description)	3,7%	11,1%	48,1%	37,0%	100,0%

Child's school year (description) * Education Father Crosstabulation

			Education Father					
			Primária (antiga 4ª classe)	Ensino Secundário (9º ano)	12º ano	Licenciatura ou Bacharelato	Estudos Pós-Graduados	Total
Child's school year (description)	2nd grade	Count	0	2	4	5	9	20
		% within Child's school year (description)	,0%	10,0%	20,0%	25,0%	45,0%	100,0%
	4th grade	Count	0	2	2	6	8	18
		% within Child's school year (description)	,0%	11,1%	11,1%	33,3%	44,4%	100,0%
	Pre-school	Count	1	1	4	6	3	15
		% within Child's school year (description)	6,7%	6,7%	26,7%	40,0%	20,0%	100,0%
Total		Count	1	5	10	17	20	53
		% within Child's school year (description)	1,9%	9,4%	18,9%	32,1%	37,7%	100,0%

Appendix 8: Consent form model (parents)

Mafalda P. F. Crespo Osório, Aluna de Mestrado
FEUNL – Faculdade de Economia e Gestão da Universidade Nova de Lisboa
Campus de Campolide
1099-032 LISBOA

Assunto: Pedido de autorização para participação em estudo sobre as percepções das crianças como consumidoras de sumos

Exmo. Sr. Encarregado de Educação,

Sou aluna de mestrado de *Marketing* da FEUNL e estou no presente momento a realizar a minha investigação na área de Comportamento das Crianças como Consumidoras.

Desta forma, estou a conduzir um estudo sobre as percepções do consumidor relativamente a sumos, para o qual necessitava que o(a) seu educando(a) participasse numa actividade na escola, que consiste em fazer um desenho e posteriormente explicar o que desenhou. Esta actividade será feita em duas fases (compostas cada uma por desenho e uma pequena entrevista), com uma semana de intervalo. Não será mencionada nenhuma marca real na experiência e não se trata de promover nenhuma marca ou produto, ou de manipular as preferências do consumidor, mas sim de observar as variáveis implícitas nas escolhas das crianças.

Para complementar esta experiência, iria pedir-lhe que o(a) Sr(a) respondesse ao breve questionário que segue após esta carta e que o devolvesse na escola juntamente com esta folha de autorização assinada (por favor não separe as folhas e entregue ambas à professora do(a) seu filho(a)).

Os dados recolhidos serão analisados por mim e a sua confidencialidade é total, sendo apenas publicados na tese os resultados do estudo sem a referência aos dados dos alunos, e sem a identificação das escolas onde o estudo foi realizado (apenas se mencionará a localidade e o tipo de escola pública ou privada). É possível que os resultados do estudo sejam apresentados em conferências, artigos/livros ou notícias relacionadas com o tema, nesse caso, serão enviados para as escolas que participam no estudo podendo ser consultados por todos os encarregados de educação.

Com os melhores cumprimentos,

(Mafalda Osório)

Autorizo o(a) meu educando(a) _____ _____

do ___º ano, turma _____ a participar neste estudo.

_____, _____ de _____, de 2010

Assinatura do Encarregado de Educação:

_____

Contactos: Mafalda Osório – mafalda.osorio@gmail.com – (+351) 966 971 820

Appendix 9: Images presented in the intervention phase

Appendix 10: Drawings analysis grid for preschoolers and 2nd graders

Aspectos a analisar no desenho: / Questões	"Então, diz-me lá o que é que desenhaste?"	"O que está a acontecer no desenho?"	"O que é isto?" (para todos os elementos do desenho)	"Quem são as personagens?"	"São crianças ou adultos?"	"O que é que a personagem está a sentir?"	"Este sumo é bom?"	"A que sabe o sumo?"	"O que achas tu deste sumo?"	"Achas que faz bem? É saudável?"	"Deve-se beber muito, pouco, ou mais ou menos?"	**Outras Perguntas...**
Divertido												
Alegre / Contente												
Bom												
Saboroso												
Fixe												
Fresco												
Aventura												
Dá Prazer ao Beber												
Sério												
É de Confiança												
Saudável												
Menciona Energia (Posso brincar muito se o beber)												
Bebe-se com amigos												
Bebe-se com os pais / adultos												
Menciona Packaging												
Sumo no Copo												
Menciona Preço												
Menciona Ingredientes												
"1 copo por dia é bom"												
Menciona o contexto de alimentação saudável (outros alimentos)												
Menciona protecção contra doenças												
Desenhou Adultos												
Desenhou Crianças												
Outras Personagens												
Árvore												
Calor												
Dentro de Casa												
Fora de Casa												
Loja / Supermercado (ponto de venda)												
Doce												
Nome: "ZONKO"												
Mascote "ZONKO"												
Publicidade												
Brinde												
Deve beber-se MUITO sumo												
Deve beber-se POUCO sumo												
Deve beber-se sumo em QUANTIDADES MODERADAS												
Sem açúcares adicionados												
Com gás												
Sem gás												

Appendix 11: Questionnaires for 4th graders

Appendix 11.1.: First Phase (19.04.2010)

Mafalda P. F. Crespo Osório, Aluna de Mestrado
FEUNL – Faculdade de Economia e Gestão da Universidade Nova de Lisboa
Campus de Campolide
1099-032 LISBOA

Questionário

Dados do(a) Aluno(a):

Nome _____

_____

____º ano Turma _____

_____ / 04 / 2010

ATENÇÃO: Neste questionário **não há** respostas correctas ou erradas! Escreve o que sentires ☺

1. O que está a acontecer no teu desenho?

_____
_____
_____

2. Descreve o teu desenho utilizando quatro adjectivos:

2.1. _____
2.2. _____
2.3. _____
2.4. _____

3. Quem é ou são as personagens? (coloca números no desenho e faz a correspondência abaixo:)

3.1._____

3.2._____

…

4. As personagens são Crianças ou Adultos? (por favor escreve à frente da respectiva personagem)

5. O que está a(s) personagem(s) a sentir? Assinala com uma cruz a(s) resposta(s) correcta(s):

É **divertido** beber *Zonko*	
É **bom** beber *Zonko*	
O sumo *Zonko* é **saboroso**	
É **fixe** beber *Zonko*	
O sumo *Zonko* é **fresco**	
O sumo *Zonko* é **sério**	
Se beber *Zonko*, pode **brincar muito**	
O *Zonko* bebe-se com **amigos**	
Que o *Zonko* bebe-se com os **pais** (ou outros adultos)	
O sumo *Zonko* é **saudável**	
A **embalagem** do *Zonko* é **muito engraçada**	
O sumo *Zonko* é **caro**	
O sumo *Zonko* é **barato**	

6. Como imaginas o sabor do sumo? Escreve dois ou três adjectivos:

6.1._____
6.2._____
6.3._____

Muito obrigada!

Appendix 11.2.: Second Phase (26.04.2010)

UNIVERSIDADE NOVA DE LISBOA ECONOMIA GESTÃO

Mafalda P. F. Crespo Osório, Aluna de Mestrado
FEUNL – Faculdade de Economia e Gestão da Universidade Nova de Lisboa
Campus de Campolide
1099-032 LISBOA

Questionário

Dados do(a) Aluno(a):

Nome _____

_____

4 º ano Turma **A** **26** / 04 / 2010

ATENÇÃO: Neste questionário **não há** respostas correctas nem erradas! Escreve o que sentires ☺

1. O que está a acontecer no teu desenho?

_____

_____

_____

2. Descreve o teu desenho utilizando quatro adjectivos:

   a. _____

   b. _____

   c. _____

   d. _____

3. Quem são as personagens? (coloca números no desenho e faz a correspondência abaixo:)

a. _____ - adulto / criança / nenhum

b. _____ - adulto / criança / nenhum

…

j. _____ - adulto / criança / nenhum

4. As personagens são **Crianças** ou **Adultos**? (por favor, faz um círculo à volta da palavra correcta, à frente da respectiva personagem, acima)

5. O que estão as personagens a sentir? Assinala com uma cruz as respostas correctas:

Que é **divertido** beber *Zonko*	
Que é **bom** beber *Zonko*	
Que o sumo *Zonko* é **saboroso**	
Que é **fixe** beber *Zonko*	
Que beber *Zonko* é como uma **aventura**	
Que o sumo *Zonko* é **fresco**	

Que o sumo *Zonko* é **sério**	
Que se beber *Zonko*, pode **brincar muito**	
Que o *Zonko* se bebe com **amigos**	
Que o *Zonko* se bebe com os **pais** (ou outros adultos)	
Que o sumo *Zonko* é **saudável**	
Que o sumo *Zonko* é **de confiança**	
Que a **embalagem** do *Zonko* é **muito engraçada**	
Que o sumo *Zonko* é **caro**	
Que o sumo *Zonko* é **barato**	
Que o sumo *Zonko* ajuda a **proteger-me contra doenças**	
Que **um copo** de *Zonko* por dia **faz-me bem**	
Que deve beber *Zonko*, mas deve acompanhar com uma **alimentação variada**	
Pensa nos **ingredientes** do sumo quando o bebe	

6. Como imaginas o sabor do sumo? Escreve um adjectivo:

   a. _____

7. E tu? O que pensas do sumo? Escreve uma frase que descreva a tua ideia!

Muito obrigada!

Appendix 12: Parents' Questionnaire

Questionário

1. **Dados dos Pais** (no caso de apenas existir um dos pais, deixe o espaço em branco)**:**

   a. **Idade**

   Mãe: _____

   Pai: _____

b. **Nível de Escolaridade** (Assinale o nível de escolaridade que possui cada um dos pais, colocando uma cruz na opção correcta. Deverá escolher o maior nível de escolaridade que possui)**:**

	Sem estudos ou primária incompleta	**Primária (antiga 4ª classe)**	**Ensino Secundário (9º ano)**	**12º ano**	**Licenciatura ou Bacharelato**	**Estudos Pós-Graduados**
Mãe						
Pai						

8. Como definiria a alimentação das crianças nos dias de hoje, comparativamente à alimentação na sua infância?

Pior ☐ **Idêntica** ☐ **Melhor** ☐

Outros Comentários: _____

---

9. Como definiria a alimentação da sua(s) criança(s), comparativamente à alimentação na sua infância?

Pior ☐ **Idêntica** ☐ **Melhor** ☐

Outros Comentários: _____

---

10. Quais as suas maiores preocupações relativamente à alimentação do(s) seu(s) filho(s)?

11. Peço-lhe que ordene os seguintes factores, que dizem respeito a sumos, por ordem de importância na sua escolha para as suas crianças, colocando uma cruz na célula correspondente [1 (menos importante) - 5 (mais importante)]:

	1	2	3	4	5
O sumo é divertido					
O sumo é saboroso					
O sumo é fresco					
Se tem ou não corantes					
Se tem ou não conservantes					
Preço Baixo					
Embalagem atractiva					
A marca ser conhecida					
Elevado nível de percentagem de sumo de fruta					
Se o sumo é ou não gaseificado					
O sumo tem antioxidantes					

12. **Tabela Nutricional** (Composição aproximada por 100ml)

Peço-lhe que coloque uma cruz nos níveis dos componentes do sumo que são, para si os melhores, quando escolhe sumos para a sua criança [- (deve ter um valor baixo); M (deve ter um valor médio); + (deve ter um valor elevado)]:

	–	M	+
Hidratos de Carbono			
Calorias			
Proteínas			
Lípidos			
Fibras Alimentares			
Nível de teor de sumo			
Sódio			
Vitamina C (% da DDR*) (*DDR = Dose Diária Recomendada)			

Obrigada!

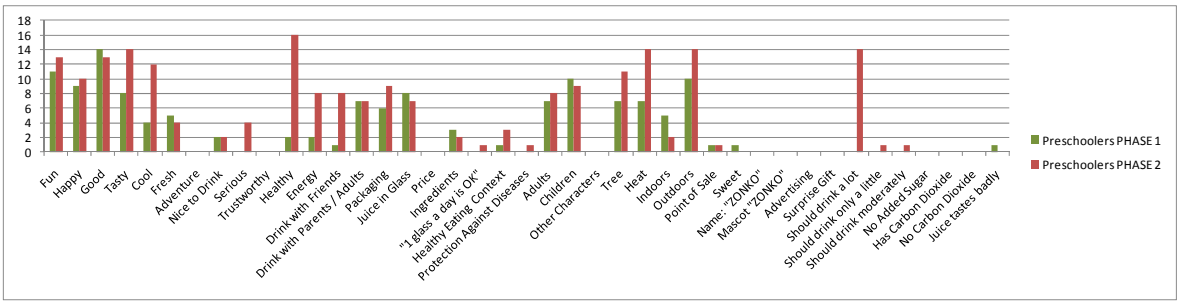
Appendix 13

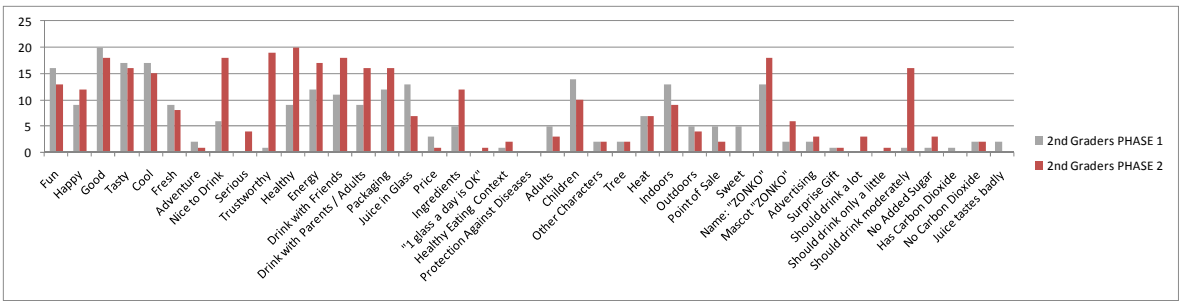
QUALQUER SUMO OU NÉCTAR DA COMPAL CONTÉM UM ELEVADÍSSIMO TEOR DE FRUTA

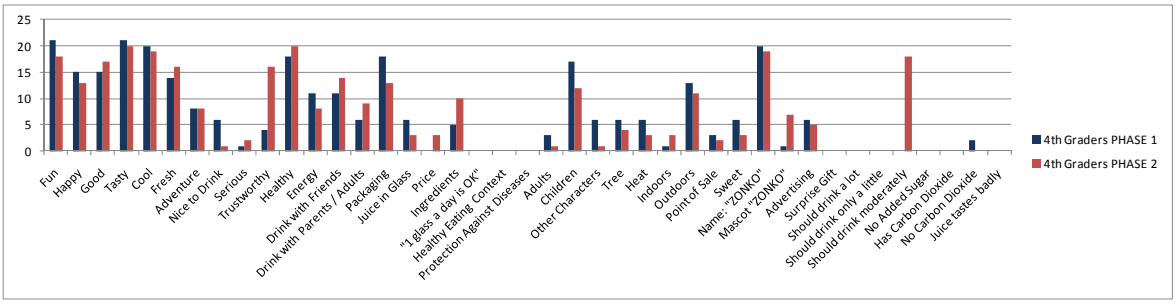
FRUTA DA COMPAL EM SUMO	RICA EM:	PROPRIEDADES
LARANJA, KIWI E MORANGO	VITAMINA C	Aumentam a resistência às infecções. Combatem a fadiga.
MORANGO E ANANÁS	VITAMINAS DO COMPLEXO B	Favorecem o bom funcionamento do sistema nervoso e dos músculos.
MANGA, MORANGO E PÊSSEGO	BETACAROTENO	Protegem a pele. Favorecem a boa saúde dos olhos.
BANANA, PÊRA E LARANJA	CÁLCIO	Intervêm no processo de formação dos ossos e dos dentes.
BANANA, LARANJA E MORANGO	MAGNÉSIO	Favorecem o bom funcionamento dos nervos e dos músculos.
BANANA, MARACUJÁ E ANANÁS	POTÁSSIO	Ajudam a controlar a pressão arterial.
BANANA, PÊSSEGO E LARANJA	FERRO	Ajudam a transportar o oxigénio no sangue.

Source: Compal, *Boas Práticas 2007* (slide 14)

Appendix 14: Bar Graphs and Frequency Table for number of students that mentioned each characteristic in their drawings, for each school year







	Preschoolers PHASE 1	Preschoolers PHASE 2	2nd Graders PHASE 1	2nd Graders PHASE 2	4th Graders PHASE 1	4th Graders PHASE 2
Fun	68,75%	81,25%	80,00%	65,00%	95,45%	81,82%
Happy	56,25%	62,50%	45,00%	60,00%	68,18%	59,09%
Good	87,50%	81,25%	100,00%	90,00%	68,18%	77,27%
Tasty	50,00%	87,50%	85,00%	80,00%	95,45%	90,91%
Cool	25,00%	75,00%	85,00%	75,00%	90,91%	86,36%
Fresh	31,25%	25,00%	45,00%	40,00%	63,64%	72,73%
Adventure	0,00%	0,00%	10,00%	5,00%	36,36%	36,36%
Nice to Drink	12,50%	12,50%	30,00%	90,00%	27,27%	4,55%
Serious	0,00%	25,00%	0,00%	20,00%	4,55%	9,09%
Trustworthy	0,00%	0,00%	5,00%	95,00%	18,18%	72,73%
Healthy	12,50%	100,00%	45,00%	100,00%	81,82%	90,91%
Energy	12,50%	50,00%	60,00%	85,00%	50,00%	36,36%
Drink with Friends	6,25%	50,00%	55,00%	90,00%	50,00%	63,64%
Drink with Parents / Adults	43,75%	43,75%	45,00%	80,00%	27,27%	40,91%
Packaging	37,50%	56,25%	60,00%	80,00%	81,82%	59,09%
Juice in Glass	50,00%	43,75%	65,00%	35,00%	27,27%	13,64%
Price	0,00%	0,00%	15,00%	5,00%	0,00%	13,64%
Ingredients	18,75%	12,50%	25,00%	60,00%	22,73%	45,45%
"1 glass a day is OK"	0,00%	6,25%	0,00%	5,00%	0,00%	0,00%
Healthy Eating Context	6,25%	18,75%	5,00%	10,00%	0,00%	0,00%
Protection Against Diseases	0,00%	6,25%	0,00%	0,00%	0,00%	0,00%
Adults	43,75%	50,00%	25,00%	15,00%	13,64%	4,55%
Children	62,50%	56,25%	70,00%	50,00%	77,27%	54,55%
Other Characters	0,00%	0,00%	10,00%	10,00%	27,27%	4,55%
Tree	43,75%	68,75%	10,00%	10,00%	27,27%	18,18%
Heat	43,75%	87,50%	35,00%	35,00%	27,27%	13,64%
Indoors	31,25%	12,50%	65,00%	45,00%	4,55%	13,64%
Outdoors	62,50%	87,50%	25,00%	20,00%	59,09%	50,00%
Point of Sale	6,25%	6,25%	25,00%	10,00%	13,64%	9,09%
Sweet	6,25%	0,00%	25,00%	0,00%	27,27%	13,64%
Name: "ZONKO"	0,00%	0,00%	65,00%	90,00%	90,91%	86,36%
Mascot "ZONKO"	0,00%	0,00%	10,00%	30,00%	4,55%	31,82%
Advertising	0,00%	0,00%	10,00%	15,00%	27,27%	22,73%
Surprise Gift	0,00%	0,00%	5,00%	5,00%	0,00%	0,00%
Should drink a lot	0,00%	87,50%	0,00%	15,00%	0,00%	0,00%
Should drink only a little	0,00%	6,25%	0,00%	5,00%	0,00%	0,00%
Should drink moderately	0,00%	6,25%	5,00%	80,00%	0,00%	81,82%
No Added Sugar	0,00%	0,00%	5,00%	15,00%	0,00%	0,00%
Has Carbon Dioxide	0,00%	0,00%	5,00%	0,00%	0,00%	0,00%
No Carbon Dioxide	0,00%	0,00%	10,00%	10,00%	9,09%	0,00%
Juice tastes badly	6,25%	0,00%	10,00%	0,00%	0,00%	0,00%

Appendix 15: Daily Recommended Values according to the Portuguese "New Food Wheel"

Nutrients	Daily Recommendations
Vitamin A (μg) RE)†	800*
Vitamin C (mg)	75*
Calcium (mg)	800*
Phosphorus (mg)	700*
Iodine (μg)	150*
Iron (mg)	10*
Fiber (g)	> 25
Sodium (g)	< 2.4
Cholesterol (mg)	< 300

	-	M	+
Carbohydrates			✓
Calories		✓	
Proteins	✓		
Lipids	✓		
Fibers			✓
% of fruit juice			✓
Sodium	✓		
Vitamins			✓

* Median of the values from all age groups including both men and women (excluding children until the age of one).
† Retinol equivalents: 1 ret eq = 1 µg retinol or 6 µg β-carotene.

Source: ***A New Food Guide for the Portuguese Population: Development and Technical Considerations*** **(Rodrigues, Franchini, Graça, and Almeida, 2006)**

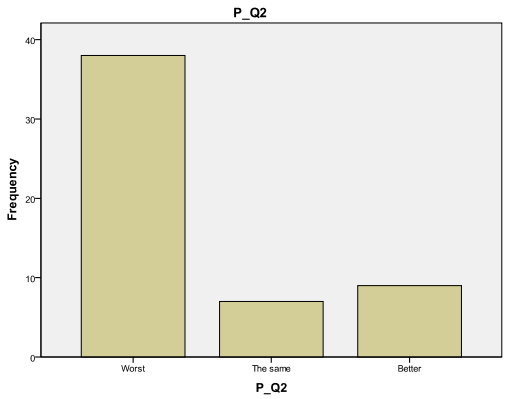
Appendix 16: Parents' answers to questions no. 2 and 3 frequency tables and bar graphs

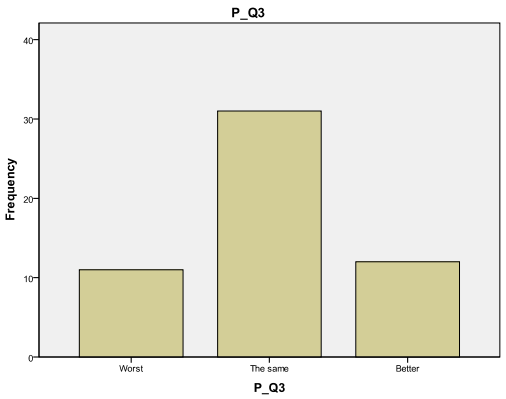
P_Q2

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Worst	38	35,2	70,4	70,4
	The same	7	6,5	13,0	83,3
	Better	9	8,3	16,7	100,0
	Total	54	50,0	100,0	
Missing	System	54	50,0		
Total		108	100,0		

P_Q3

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Worst	11	10,2	20,4	20,4
	The same	31	28,7	57,4	77,8
	Better	12	11,1	22,2	100,0
	Total	54	50,0	100,0	
Missing	System	54	50,0		
Total		108	100,0		





Appendix 17: Paired Sample Statistics for Preschoolers

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	F1. Bom	,88	16	,342	,085
	F2. Bom	,81	16	,403	,101
Pair 2	F1. Dá Prazer ao Beber	,13	16	,342	,085
	F2. Dá Prazer ao Beber	,13	16	,342	,085
Pair 3	F1. É de Confiança	,00[a]	16	,000	,000
	F2. É de Confiança	,00[a]	16	,000	,000
Pair 4	F1. Saudável	,13	16	,342	,085
	F2. Saudável	1,00	16	,000	,000
Pair 5	F1. Menciona Energia (Posso brincar muito se o beber)	,13	16	,342	,085
	F2. Menciona Energia (Posso brincar muito se o beber)	,50	16	,516	,129
Pair 6	F1. Menciona Ingredientes	,19	16	,403	,101
	F2. Menciona Ingredientes	,13	16	,342	,085
Pair 7	F1. "1 copo por dia é bom"	,00	1[b]	.	.
	F2. "1 copo por dia é bom"	1,00	1[b]	.	.
Pair 8	F1. Menciona o contexto de alimentação saudável (outros alimentos)	,06	16	,250	,063
	F2. Menciona o contexto de alimentação saudável (outros alimentos)	,19	16	,403	,101
Pair 9	F1. Menciona protecção contra doenças	,00	16	,000	,000
	F2. Menciona protecção contra doenças	,06	16	,250	,063
Pair 10	F1. Fora de Casa	,63	16	,500	,125
	F2. Fora de Casa	,88	16	,342	,085
Pair 11	F1. Não tem Açúcar Adicionado	,00[a]	16	,000	,000
	F2. Não tem Açúcar Adicionado	,00[a]	16	,000	,000
Pair 12	F1. Sem Gás	,00[a]	16	,000	,000
	F2. Sem Gás	,00[a]	16	,000	,000

a. The correlation and t cannot be computed because the standard error of the difference is 0.

b. The correlation and t cannot be computed because the sum of caseweights is less than or equal to 1.

Appendix 18: Paired Sample Statistics for 2nd graders

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	F1. Bom	1,00	20	,000	,000
	F2. Bom	,90	20	,308	,069
Pair 2	F1. Dá Prazer ao Beber	,30	20	,470	,105
	F2. Dá Prazer ao Beber	,90	20	,308	,069
Pair 3	F1. É de Confiança	,05	20	,224	,050
	F2. É de Confiança	,95	20	,224	,050
Pair 4	F1. Saudável	,45	20	,510	,114
	F2. Saudável	1,00	20	,000	,000
Pair 5	F1. Menciona Energia (Posso brincar muito se o beber)	,60	20	,503	,112
	F2. Menciona Energia (Posso brincar muito se o beber)	,85	20	,366	,082
Pair 6	F1. Menciona Ingredientes	,25	20	,444	,099
	F2. Menciona Ingredientes	,60	20	,503	,112
Pair 7	F1. "1 copo por dia é bom"	,00	1[a]	.	.
	F2. "1 copo por dia é bom"	1,00	1[a]	.	.
Pair 8	F1. Menciona o contexto de alimentação saudável (outros alimentos)	,05	20	,224	,050
	F2. Menciona o contexto de alimentação saudável (outros alimentos)	,10	20	,308	,069
Pair 9	F1. Menciona protecção contra doenças	,00[b]	20	,000	,000
	F2. Menciona protecção contra doenças	,00[b]	20	,000	,000
Pair 10	F1. Fora de Casa	,25	20	,444	,099
	F2. Fora de Casa	,20	20	,410	,092
Pair 11	F1. Não tem Açúcar Adicionado	,05	20	,224	,050
	F2. Não tem Açúcar Adicionado	,15	20	,366	,082
Pair 12	F1. Sem Gás	,10	20	,308	,069
	F2. Sem Gás	,10	20	,308	,069

a. The correlation and t cannot be computed because the sum of caseweights is less than or equal to 1.

b. The correlation and t cannot be computed because the standard error of the difference is 0.

Appendix 19: Paired Sample Statistics for 4th graders

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	F1. Bom	,68	22	,477	,102
	F2. Bom	,77	22	,429	,091
Pair 2	F1. Dá Prazer ao Beber	,27	22	,456	,097
	F2. Dá Prazer ao Beber	,05	22	,213	,045
Pair 3	F1. É de Confiança	,18	22	,395	,084
	F2. É de Confiança	,73	22	,456	,097
Pair 4	F1. Saudável	,82	22	,395	,084
	F2. Saudável	,91	22	,294	,063
Pair 5	F1. Menciona Energia (Posso brincar muito se o beber)	,50	22	,512	,109
	F2. Menciona Energia (Posso brincar muito se o beber)	,36	22	,492	,105
Pair 6	F1. Menciona Ingredientes	,23	22	,429	,091
	F2. Menciona Ingredientes	,45	22	,510	,109
Pair 7	F1. "1 copo por dia é bom"	.	0[a]	.	.
	F2. "1 copo por dia é bom"	.	0[a]	.	.
Pair 8	F1. Menciona o contexto de alimentação saudável (outros alimentos)	,00[b]	22	,000	,000
	F2. Menciona o contexto de alimentação saudável (outros alimentos)	,00[b]	22	,000	,000
Pair 9	F1. Menciona protecção contra doenças	,00[b]	22	,000	,000
	F2. Menciona protecção contra doenças	,00[b]	22	,000	,000
Pair 10	F1. Fora de Casa	,59	22	,503	,107
	F2. Fora de Casa	,50	22	,512	,109
Pair 11	F1. Não tem Açúcar Adicionado	,00[b]	22	,000	,000
	F2. Não tem Açúcar Adicionado	,00[b]	22	,000	,000
Pair 12	F1. Sem Gás	,09	22	,294	,063
	F2. Sem Gás	,00	22	,000	,000

a. The correlation and t cannot be computed because there are no valid pairs.

b. The correlation and t cannot be computed because the standard error of the difference is 0.